

REMARKS

The Examiner's Action mailed on December 14, 2005 has been received and its contents carefully considered.

In this Amendment, Applicant has amended the specification for improved clarity and to overcome the specification informalities objection. Also, Applicant has amended claims 1, 3, 4, 8, 10 and 11, canceled claims 2 and 9, and added claim 14. Claims 1 and 8 are independent claims. Claims 1, 3-8, and 10-14 are pending in this application. Examination of the amended application respectfully is requested.

The Examiner has objected to the disclosure and claims for various informalities. In response thereto, the disclosure and claims have been amended to correct the informalities specifically noted by the Examiner, and to correct other informalities noted during the review. It is requested that these objections be withdrawn.

The Examiner has rejected claims 1-4 and 6-7 under 35 U.S.C. 103(a) as being unpatentable over *Yamamoto et al.* (US 6,089,739). It is submitted that these claims are patentably distinguishable over the cited reference for at least the following reasons.

Applicant's amended independent claim 1 recites a direct backlight module, comprising at least a reflective base, a buffer block, a lamp tube and a casing.

The reflective base has two opposite side regions of which both having **two opposite openings** located at two ends of each side region separately. The buffer block is disposed on the reflecting base and is positioned opposite to one of the openings. The lamp tube has two opposite electrodes at two ends of the lamp tube separately, wherein one of the electrodes is mounted in the buffer block. The casing is assembled with the reflective base and covers the buffer block, and an airflow channels is formed by the combination of an inner chamber of the casing and the openings of the side regions. **The lamp tube, the buffer block and the airflow channel are constructed on the same level.**

In contrast, *Yamamoto* **does not** teach or suggest the two opposite side regions having two opposite openings located at two ends of each side region separately. Also, *Yamamoto* **fails** to teach or suggest the lamp tube, the buffer block and the airflow channel are constructed on the same level. Instead, *Yamamoto* discloses that the airflow channel for introducing the cooling air from the opening 7a to the opening 7b is positioned **under the reflective plate 3** (Figure 1, and Col. 3, line 16 – line 25). Accordingly, the airflow channel and the lamps 4 of *Yamamoto* are set on **different** levels, i.e., respectively **on** the level of the reflective plate 3 and **under** the level of the reflective plate 3. Thus, in this reference, the cooling air diffuses heat accumulated within the housing when the energy generated from the lamp tube has already heated the reflective plate. In contrast, the lamp tubes 220, the buffer blocks 215 and the airflow channels 250a,

250b of the present application are constructed on the same level (i.e. on the level of the reflective base 210, as shown in FIG. 4), which means the heat generated from the electrodes of the lamp tube and radiated into the airflow channel can be directly and efficiently transmitted outside (through the openings). Accordingly, the whole lamp tube and reflective base of the present application can be maintained at a lower temperature than the design disclosed by *Yamamoto*. Since the light emitting intensity and the useful life of the lamp tube are strongly related to the temperature of the lamp tube, the physical structure and relationships of the present application, particularly the lamp tubes, the buffer blocks and the airflow channels being constructed on the same level, a higher heat transmitting efficiency is provided to prolong the operating life of the product (i.e. the backlight module).

It is noted that the Examiner has mentioned that *Yamamoto* teaches a casing [Figure 2: (14)] for covering the buffer block, and allowing an airflow channel to be formed by the combination of an inner chamber of the casing and the openings when the casing is installed in the reflective base, with regard to the rejection of claims 2 and 9 of the present application. However, Figure 2 of *Yamamoto* is a **plan** view of Figure 1, and it **can not** be clearly shown that the airflow channel and the lamp are positioned at different levels. Only the light source device depicted in Figure 1 (section view) of *Yamamoto* is applicable for comparing with the direct backlight module of the present application.

Further, the cited reference, *Hayashi et al.*, (applied against claim 5) doesn't teach or suggest the lamp tube, the buffer block and the airflow channel being constructed on the same level. As shown in FIG. 2 of *Hayashi*, the lamp tubes 2, 4 are positioned at the inner side of the housing 6, while the cooling air passes over the outside of the housing. Similarly, the whole lamp tube and reflective base of the present application can be maintained at a lower temperature than the design disclosed by *Hayashi*.

For at least the reasons above, it is submitted that Applicant's amended independent claim 1, and the claims dependent therefrom, are patentably distinguishable over the cited references. It is requested that the rejection be withdrawn.

The Examiner has also rejected claims 8-13 under 35 U.S.C. 103(a) as being unpatentable over *Yamamoto et al.* (US 6,089,739) in view of *Hayashi et al.* It is submitted that these claims are patentably distinguishable over the cited references for at least the following reasons.

Applicant's amended independent claim 8 recites a direct backlight module at least comprising a reflective base, a buffer block, a lamp tube, a casing and a heat-transmitting fin. The reflective base has two opposite side regions, both of which have **two opposite openings** located at two ends of each side region separately. The buffer block is disposed on the reflecting base and positioned opposite to one of the openings. The lamp tube has two opposite

electrodes at two ends of the lamp tube separately, wherein one of the electrodes is mounted in the buffer block. The casing is assembled with the reflective base and covers the buffer block, and an airflow channel is formed by the combination of an inner chamber of the casing and the openings of the side regions. The heat-transmitting fin is **disposed on the buffer block and inside the casing**, so that heat generated from the two electrodes of the lamp tube is irradiated from the buffer block and the heat-transmitting fin, and then transmitted outside through the airflow channel.

In contrast, *Yamamoto* **does not** teach or suggest the two opposite side regions having two opposite openings located at two ends of each side region separately. Also, *Yamamoto* **fails** to teach or suggest a heat-transmitting fin being disposed on the buffer block so that the heat generated from the two electrodes of the lamp tube can be irradiated from the buffer block and the heat-transmitting fin, and then transmitted outside through the airflow channel. Instead, *Yamamoto* discloses heat-radiating portions [Figure 1: (11)] formed at the reflective plate [Figure 1: (3)] to make the temperature distribution uniform over the entire surface of the reflective plate (Col. 3, line 65 – Col.4, line 14). The heat-radiating portions only function when the energy generated from the lamp tube has already heated the reflective plate. However, the heat-transmitting fin in the present application is **disposed on the buffer block and inside the casing**, which means the heat-transmitting fin inside the casing facilitates the dissipation

of the heat generated from the electrodes of the lamp tube into the airflow channel directly, and the heat radiated into the airflow channel can be immediately transmitted outside (through the openings). Accordingly, the whole lamp tube and reflective base of the present application can be maintained at a lower temperature than the design disclosed by *Yamamoto*. Since the light emitting intensity and the useful life of the lamp tube are strongly related to the temperature of the lamp tube, the physical structure and relationships of the features, particularly the heat-transmitting fin being disposed on the buffer block and inside the casing, heat transfer of the system is facilitated, and a higher heat transmitting efficiency is provided, to prolong the operating life of the product (i.e. the backlight module).

The Examiner has also mentioned that "*Hayashi* (US 6,655,810) teaches a lighting unit, wherein a heat-transmitting fin [Figure 1B: (35)] disposed on a buffer block [Figure 1B: (6)] housing a lamp tube with electrodes, accentuates heat transfer of the system via airflow [Figure 2]". However, the reference number (6) of *Hayashi* denotes a housing (please see Col. 13, line 54 and Col. 15, lines 28-32). Also, the heat-transmitting fin [Figure 1B: (35)] is provided adjacent to the **outer surface of the housing 6**. The heat generated by the cold-cathode tubes 2, 4 is conducted by the housing 6 and then radiated outside by the radiation fin 35, and the light source unit is thereby cooled (Col. 15, lines 28-32). *Hayashi* does not disclose or suggest the buffer block. Thus, *Hayashi* **fails** to teach or

suggest that the heat-transmitting fin is disposed on the buffer block and inside the casing. Accordingly, the temperature of the whole lamp tube and reflective base of the present application can be maintained at a lower level than the design disclosed by *Hayashi*.

Accordingly, the cited references teach the radiation fin is formed or attached to the outer surface of the housing, and one having ordinary skill in the art at the time of the invention was made would not have gone beyond the teaching.

For at least these reasons, it is submitted that Applicant's independent claim 8, as amended, and the claims dependent therefrom, are patenably distinguishable over the cited references.

Based on the above, it is submitted that the independent claims 1 and 8, as amended, patentably distinguish over the prior art and the cited references, and claims 3-7 and 10-14 are allowable for at least the reason that they depend from claims 1 and 8, so that this application is in condition for allowance. Such action and the passing of this case to issue are therefore respectfully requested.

If the Examiner believes that a conference would be of value in expediting the prosecution of this application, the Examiner is hereby invited to telephone the undersigned counsel to arrange for such a conference.

Should any fee be required, the Commissioner is hereby authorized to charge the fee to our Deposit Account No. 18-0002, and advise us accordingly.

Respectfully submitted,



March 10, 2006

Date

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